

REMARKS

Applicants have cancelled claim 38 without prejudice and expressly reserve the right to pursue the subject matter of the cancelled claim in one or more subsequent applications.

Applicants have added dependent claims 39-43, which are dependent of allowed claim 4 and are fully supported by the specification as filed, e.g.:

Support for claim 39 is found on page 7, lines 7-8:

Support for claim 40 is found e.g., in Figures 8 and 9:

Support for claims 41 and 42 is found e.g. on page 4, last sentence and page 6, line 10, and:

Support for claim 43 is found e.g., on 7, lines 3-4.

Applicants have added new independent claim 44. Support for claim 44 is found e.g., on page 4, second and last paragraphs and page 6, lines 25-27.

Applicants have amended claim 2 to recite

2. A light guide for use in a dental curing device, said light guide comprising an entrance area, a lens, at least one reflector, and a light pipe having an exit area wherein the lens, at least one reflector, and light pipe are constructed of a single continuous homogeneous material and wherein said light pipe is curved such that the exit area of the light pipe is out of line with the entrance area of said light guide and said exit area is sized to be placed inside a patient's mouth such that light is projected onto a single tooth and wherein the light guide consists of a single material selected from the group consisting of acrylic, plastic and glass.

Support for the amendments can be found, e.g., in Figures 3 and 7-9.

Allowable Subject Matter

Applicants thank the Examiner for the allowance of claim 4.

35 U.S.C. § 112, First Paragraph Rejections

Claims 2, 19-32 and 38 stand rejected under 35 U.S.C. § 112, first paragraph for purportedly lacking written description.

The Examiner states that the phrase, “the light pipe comprises a proximal end..., wherein the proximal end of the light pipe is distal to the at least one reflector” has no clear support in the specification. Although Applicants respectfully disagree, claim 2 as currently amended does not recite the phrase “the light pipe comprises a proximal end... wherein the proximal end of the light pipe is distal to the at least one reflector” and as such the rejection no longer applies.

Regarding claims 19 and 22, the Examiner contends that the phrase “and wherein the light guide further comprises a straight wall section immediately distal to the reflecting means” is not supported by the specification. Applicants respectfully disagree.

Applicants’ Figure 3 illustrates an embodiment of this invention and references the proximal end of the light guide. Figure 6 identified as the “Den-Mat Proximal End detail”, displays a detailed view of the proximal end of the light guide, and depicts an LED/emitter light source. Claims 19 and 22 recite that the proximal end of the light guide receives light from a light source. One of skill in the art would therefore understand the orientation of the light guide in the figures and thus would understand which end is proximal and which end is distal to the reflector. As such, one of skill in the art would understand that the straight wall section depicted in Figure 6 is immediately distal to the reflector. Accordingly, the phrase “wherein the light guide further comprises a straight wall section immediately distal to the reflecting means” as recited in claims 19 and 22 is supported by the specification.

Regarding claim 38, the Examiner contends that the term “housing” and the phrase “the distal end of the light pipe is not enclosed by the housing” are new matter not supported by the specification as originally filed. Applicants respectfully disagree but nonetheless have cancelled claim 38 without prejudice expressly reserving the right to pursue the subject matter of the cancelled claim in one or more subsequent applications.

In view of the foregoing remarks, applicants respectfully request that the Examiner reconsider and withdraw the rejection of the claims under 35 U.S.C. 112, first paragraph for purported lack of written description.

35 U.S.C. § 102 Rejections

Claims 2, 19-24 and 29-31 stand rejected under 35 U.S.C. 102(e) as being anticipated by Bianchetti et al., U.S. Patent No. 6,857,873, (“Bianchetti”). Applicants respectfully disagree and in view of the following remarks request that the Examiner reconsider and withdraw the rejection of the claims

The light guide as presently claimed comprises a light pipe that comprises an exit area. The light pipe is also curved such that the exit area of the light pipe is out of line with the entrance area of said light guide. Support for this feature is found, for example, in Figure 3, which recites “necked-down/flattened area here allows for a tighter bend (smaller radius of curvature)” and Figures 7-9, which also depict light guides of this invention having curved light pipes. Support is further found in specification paragraph [0036], which recites in part

“Image conduit is typically constructed of small glass rods (fiber optics) fused together to form a large bundle (conduit). Image conduit is more efficient at transmitting light around a bend than a simple light pipe.”

In addition, in the claimed light guide, the lens, at least one reflector and the light pipe, which comprises a curve such that the exit area of the light pipe and the entrance area of the light guide are out of line, are constructed of a single continuous homogenous material. Furthermore, the light guide of claim 2

consists of a single material selected from the group consisting of acrylic, plastic or glass. Bianchetti fails to describe such a light guide.

The Examiner contends that element “46” in Bianchetti’s light guide is a light pipe. If one were to accept the Examiner’s contention, then Bianchetti Figure 3 demonstrates that Bianchetti does not anticipate the claimed invention. Bianchetti’s element 46 is not curved such that the light guide’s area where light enters, and area where light exits are out of line. Thus Bianchetti does not disclose the presently claimed light guide having a curved light pipe, wherein the entrance area of the light guide and the exit area of the light pipe are out of line.

In addition, Bianchetti fails to teach a light guide having a light pipe having an exit area that is sized to be placed inside a patient’s mouth such that light is projected onto a single tooth. The Examiner contends that element “46” in Bianchetti’s light guide is a light pipe, but Bianchetti describes portion 46 as “a third intermediate portion 46, substantially cylindrical in shape that continues ...” (Col. 5, lines 5-7). Being an intermediate portion, 46 is not “sized to be placed inside a patient’s mouth...” as recited in the claims.

Bianchetti also fails to disclose a light guide that consists of a single material selected from the group consisting of acrylic, plastic or glass. Although the Examiner states “the light guide (40) consists of a single material selected from the group consisting of acrylic, plastic and glass (Col. 2, lines 56-57)” (Office Action, page 5), Col. 2, lines 56-57 of Bianchetti recites:

“This object is achieved in accordance with the
invention with the characteristics listed in appended
claim 1”

Bianchetti claim 1 does not refer to “acrylic, plastic and glass” in any form.

Anticipation under 35 U.S.C. §102 requires the disclosure in a single piece of prior art of each and every limitation of a claimed invention (see, e.g., *Electro Med. Sys. S.A. v. Cooper Life Sciences*, 32 USPQ2d 1017, 1019 (Fed. Cir. 1994)). Bianchetti fails to describe a light guide comprising a curved light pipe, such

that the entrance area of the light guide and exit are of the light pipe are out of line, or a curved light pipe wherein the exit area is sized to be placed inside a patient's mouth such that light is projected onto a single tooth. Bianchetti also fails to describe a light guide as claimed, which consists of a single material selected from the group consisting of acrylic, plastic and glass. As such, Bianchetti fails to anticipate the invention as described in claim 2.

Regarding claims 19-24 and 29-31, the Examiner contends that Bianchettin discloses that the

“light guide (40) further comprises a straight wall section (cylindrical section 46 is straight longitudinal section-wise) immediately distal to the reflecting means (43)”(Office Action page 5).

Applicants respectfully disagree. Section 46 in Bianchetti Figure 3 is not immediately distal to section 43, regardless of whether section 43 is a refractory or reflecting means. Rather, Sections 44 and 45 are in between sections 43 and 46. As such Bioanchetti fails to disclose each and every limitation of the claimed invention and thus fails to anticipate applicants' invention as described in claims 19-24 and 29-31.

The Examiner also contends “the light from the light source (30) travels from the proximal end (41) to the distal end (48) without passing through any substantially air spaces (Figs. 4A, 4B)” (Office Action page 5). However Figures 4A and 4B are schematics only depicting the path of the light. Figures 4A and 4B do not indicate whether the light is going through any air spaces. Thus Bianchetti does not teach that the light from the light source travels from the proximal end to the distal end without passing through any substantial air spaces

In view of the foregoing remarks, applicants respectfully request that the Examiner reconsider and withdraw the rejection of the claims under 35 U.S.C. 102.

35 U.S.C. § 103 Rejections

Claims 25-28 and 32 stand rejected under 35 U.S.C. 103(a) for purportedly being unpatentable over Bianchetti in view of Kovac et al, U.S. Patent No. 6,200,134, ("Kovac"). Applicants respectfully disagree.

Although couched in terms of combining teachings found in the prior art, the same inquiry must be carried out in the context of a purported obvious "modification" of the prior art. The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification.

In re Fritch 23 USPQ2d 1780(1992)

The Examiner states

"Claims 25-28 and 32 recite the light source being a multiple LED and not including a domed lens cover, not disclosed by Bianchetti. Kovac teaches a dental curing device having an LED array of dies (43 in Figure 2, 60 in Fig. 4) and without any domed lens cover (Figs 2&4) in contrast to domed covered and much fewer LEDs (30-Fig. 1)..." (Office Action page 6)

However, Claims 25-28 and 32 depend on claim 22 and thus incorporate all the limitations of claim 22, in addition to the characteristics of the light source. As discussed *supra*, Bianchetti fails to teach or suggest the light guide as currently claimed in claim 22. Contrary to the Examiner's contention that Bianchetti discloses that the

"light guide (40) further comprises a straight wall section (cylindrical section 46 is straight longitudinal section-wise) immediately distal to the reflecting means (43)"(Office Action page 5).

Bianchetti's Figure 3 makes clear that section 46 in is not immediately distal to section 43, regardless of whether section 43 is a refractory or reflecting means.

Rather, Sections 44 and 45 are in between sections 43 and 46. Kovac fails to compensate for Bianchetti's deficiencies.

Kovac teaches a focusing device 70 to focus radiation 65 from dies to a smaller size beam for transmission to a the receiving end of a light pipe (Col. 9, lines 63-67). Kovac does not teach or suggest a reflecting means, nor does Kovac teach a light guide comprising a straight wall section immediately distal to the reflecting means. Thus, one of skill in the art based on Kovac's disclosure would not be motivated to modify the Bianchetti device as suggested by the Examiner to generate applicants' invention as claimed.

Furthermore, one of skill in the art would not be motivated to modify Bianchetti to use multiple light sources because Bianchetti states that the "peculiarity" of his invention lies in the use of a single high flux LED:

The peculiarity of the invention lies in the fact that the light source comprises a single high flux LED"
(emphasis added) (Col. 3, lines 3-5)

Thus, even though the Kovac patent issued before Bianchetti was first filed, Bianchetti still teaches against the use of multiple LEDs.

Simply because it might be possible to modify parts of Bianchetti in the manner suggested by the Examiner, such a modification is not obvious unless the cited art itself suggested the desirability of the modification. See, *In re Fritch* 23 USPQ2d 1780 (1992). Bianchetti clearly does not suggest such a modification, and neither does Kovac.

Because Bianchetti and Kovac, alone or in combination, fail to teach or suggest the claimed invention and because there is no motivation to combine or modify the teachings of Bianchetti and Kovac as suggested by the Examiner, the combination of references cannot render the claimed invention obvious. Accordingly, Applicants respectfully request that the Examiner reconsider and withdraw the rejections under 35 U.S.C. 103.

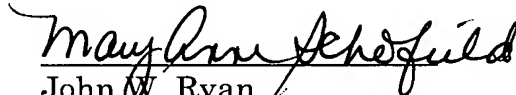
Applicants believe the present paper to be a complete and thorough response to the Final Office Action. In view of the foregoing amendments and remarks, the application is respectfully submitted to be in condition for allowance. Accordingly, a timely favorable action is earnestly solicited.

If there are any questions regarding this amendment or the application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

If necessary to effect a timely response, this paper should be considered as a petition for any additional Extension of Time sufficient to effect a timely response, and please charge any deficiency in fees or credit any overpayments to Deposit Account No. 05-1323 (Docket #101867.56513US).

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